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A multiple-strategy approach to solving the energy puzzle

BY IRMA S. RUSSELL

Increasing energy demand presents unprecedented challenges for industry and for U.S. policy makers. Add to this increased demand the growing recognition of the risks associated with energy production and use, and today's energy picture provides a puzzle of Escher-like proportions. Energy is intertwined with every facet of the modern economy, presenting profound risks, crucial benefits, and persistent questions of cause and effect. As the world's largest consumer of energy, the United States and its policy are of crucial importance both in terms of the effects on the environment and the influence of other nations. Policy statements from the Bush administration suggest that the federal government is moving toward recognition that the best solution to the energy puzzle involves multiple strategies to develop numerous energy sources while encouraging conservation.

News of global climate change, and the United States' role in it, has focused the attention of citizens as well as scientists on the production of greenhouse gases. Scientists estimate that approximately 55 percent of global climate change is attributable to carbon dioxide (CO₂) emissions from coal and petroleum use. See www.powerscorecard.org/sc_details.cfm (visited Jan. 2, 2007). The United States is the leading emitter of greenhouse gases, see Energy Information Administration, Office of Integrated Analysis and Forecasting, EI-81, U.S. Department of Energy, *U.S. Carbon Dioxide Emissions from Energy Sources 2004 Flash Estimate*, June 2005, with power plants and transportation accounting for the major portion of energy usage.

Climate change is not the only risk implicated in the puzzle. Concerns about the impacts of fossil fuel usage on the environment and human health, national security, and a host of related issues dominate the news. For example, motor vehicles are linked to significant toxic emissions. See Lowell Rothschild & Margaret N. Strand, *Mobile Source Air Toxics: What's Known, Not Known, and What To Do About It*, 21 NAT. RESOURCES & ENV'T 10 (2006). The Environmental Protection Agency (EPA) recognizes the linkage between air quality and energy use, particularly in the areas of transportation and power plants. EPA identifies "Clean Air and Global Climate Change" as Goal #1 in its Strategic Plan for 2006–2011. See 2006–2011 EPA Strategic

Plan, presented to Congress Sept. 29, 2006, at www.epa.gov/ocfo/plan/plan.htm (visited Dec. 18, 2006). The EPA Web site presents strategic target dates for stated goals for cleaner air.

President Bush's stance on energy

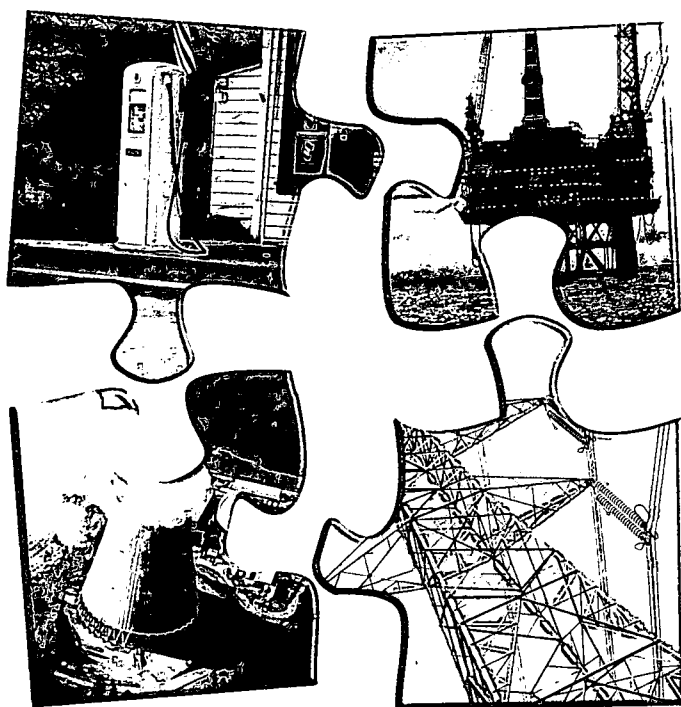
In his 2006 State of the Union address, President Bush heralded a dramatic shift in U.S. policy, declaring the American public addicted to oil. See, e.g., Elisabeth Bumiller, *Bush's Goals on Energy Quickly Find Obstacles*, N.Y. TIMES, Feb. 2, 2006, at A1. In a speech at the Renewable Energy Conference held in St. Louis last October, the president again noted the nation's dependency on fossil fuels and the need to develop alternative energy sources and strategies for conservation. The president made clear that securing oil and gas resources from foreign sources presents a cluster of issues:

We need to diversify away from oil for economic reasons. We live in a global world. When the demand for oil goes up in China or in India, it causes the price of crude oil to rise and, since we import about 60 percent of the crude oil we use, it causes our price to go up, as well, which means the economy becomes less competitive. And then, of course, there's the national security concern for oil. Why? Well, we get oil from some countries who don't particularly care for us. They don't like what we stand for.

www.whitehouse.gov/news/releases/2006/10/20061012-4.html (visited Jan. 10, 2007).

As Bush's comments suggest, energy policy and national security are inevitably linked. "No highly industrialized society can survive at present without substantial supplies of oil, and so any significant threat to the continued availability of this resource will prove a cause of crisis and, in extreme cases, provoke the use of military force." MICHAEL T. KLARE, *RESOURCE WARS: THE NEW LANDSCAPE OF GLOBAL CONFLICT* 27 (2001). Bush developed similar themes in a speech about developing the Outer Continental Shelf. "Developing these reliable domestic resources in an environmentally sound manner will help address high energy prices, strengthen our energy security and protect manufacturing jobs." See www.whitehouse.gov/news/releases/2006/12/20061209-2.html (visited Dec. 18, 2006).

In light of the multiple energy challenges, the Bush administration has stated a policy of embracing multiple strategies and



multiple energy sources. The 2005 Energy Policy Act included measures to expand the use of nuclear power, creating loan incentives, production tax credits, and risk insurance for builders in the nuclear industry. See Marla E. Mansfield, *Prospects for nuclear generation*, 38 TRENDS, 1 (Dec. 2006). Although developing a clean-burning coal has long eluded industry, Bush stated that by 2012 the United States will have developed a coal plant that will run virtually without pollutants. In the 2007 budget, the president proposed \$44 million for wind energy research and \$150 million for developing solar energy. See *President Bush Discusses Energy at Renewable Energy Conference* (Oct. 12, 2006), at www.whitehouse.gov/news/releases/2006/10/20061012-4.html (visited Jan. 1, 2007). The president also pledged to explore oil and gas in this hemisphere in an environmentally friendly way. See *President Bush Discusses Energy at Renewable Energy Conference*, The White House, Dec. 18, 2006, at www.whitehouse.gov/infocus/energy/ (visited Dec. 18, 2006).

Supply, demand and alternatives

Bush has also pointed to the need for employing multiple strategies of encouraging conservation, expanding domestic production, and finding alternative sources of energy. At a biodiesel refinery, Bush called on Americans to be "better conservers" and to "develop new fuels like biodiesel and ethanol as alternatives to diesel and gasoline." www.whitehouse.gov/news/releases/2005/05/20050516.html (visited Jan. 9, 2007).

The president is not alone in emphasizing the need for secure and diverse sources of energy. A recent report by the Energy Security Leadership Council urged "tougher vehicle fuel-efficiency standards, wider access to offshore petroleum, greater incentives for biofuel development and increased production of flex-fuel cars." Ben Geman, *ENERGY POLICY: CEOs, ex-military leaders present plan to bolster energy security*, Greenwire, at <http://0www.eenews.net.library.utulsa.edu/Greenwire/2006/12/13/archive/1/?terms=Ben%20Geman> (visited Jan. 1, 2007).

While debate continues regarding whether the peak of fossil fuel production has been reached or passed, everyone seems to recognize that supplies of oil are diminishing at a significant pace. The risk of depletion of fossil fuel reserves suggests that a diversified policy is crucial for economic development as well as health. "Even if we had ample oil, in the long run we'd need to switch to renewables, anyway." Jim Motavalli, *The Outlook on Oil: Some Experts Worry that the Production Will Soon Peak, Others Warn it Already Has*, E: THE ENVTL. MAG., 29 (Jan./Feb. 2006). Additionally, the energy required to extract energy from fossil fuel sources continues to increase as the more accessible sources of oil and gas are depleted. Moreover, continued increases in consumption and demand seem inevitable. "All available information suggests that the worldwide demand for petroleum will rise at a steady rate of approximately 2 percent per year between now and 2020." MICHAEL T. KLARE, *RESOURCE WARS: THE NEW LANDSCAPE OF GLOBAL CONFLICT* 35 (2001).

Consumers arguably have more choice in selection of energy sources than in the past. "Consumers can 'vote' with their pocket-books and switch to power products consisting of non-polluting renewable energy sources." See *Power Scorecard, Air Quality Issues of Electricity Production*, at www.powerscorecard.org/issue_detail.cfm?issue_id=3 (visited Jan. 2, 2007). Nevertheless, government policy choices are crucial to the development of alternative energy resources. Some countries have made strides in developing renewable energy resources and encouraging use of such sources. For example, through government initiatives and incentives, Brazil has incorporated renewable energy in transportation and other energy consumption because of government initiatives. "Brazil supplies 60% of its primary energy requirements from renewable energy sources, 37% from hydro and 23% from biomass under programs sponsored by the government." Richard L. Ottinger & Rebecca Williams, *Renewable Energy Sources for Development*, 32 ENVTL. L. 331, 361 (2002). The Brazilian government subsidized ethanol production until 1998 when "taxes from gasoline sales were substituted to subsidize its costs." *Id.*

cfm?issue_id=3 (visited Jan. 2, 2007). Nevertheless, government policy choices are crucial to the development of alternative energy resources. Some countries have made strides in developing renewable energy resources and encouraging use of such sources. For example, through government initiatives and incentives, Brazil has incorporated renewable energy in transportation and other energy consumption because of government initiatives. "Brazil supplies 60% of its primary energy requirements from renewable energy sources, 37% from hydro and 23% from biomass under programs sponsored by the government." Richard L. Ottinger & Rebecca Williams, *Renewable Energy Sources for Development*, 32 ENVTL. L. 331, 361 (2002). The Brazilian government subsidized ethanol production until 1998 when "taxes from gasoline sales were substituted to subsidize its costs." *Id.*

Public choice or public policy?

Considering energy issues through the lens of the public interest suggests that thorough assessment and open debate are essential to a successful energy policy. Understanding all costs of energy choices is also essential, whether the costs are borne by current or future generations. The public has a clear interest in protecting the health of citizens, families, and the planet. The

nation's dependence on fossil fuel as a primary energy source gives rise to a host of issues, ranging from price fluctuations and supply problems to the use of military action to protect energy sources in areas subject to political instability.

Despite the lack of clarity in this area, some things are beyond dispute. Energy choices impact all areas of the economy, the environment, and the public. National and

international impacts make a coordinated plan crucial, but that does not mean that a single energy source is the best strategy for meeting energy needs. The dependency of American consumers and industry on fossil fuel is clear. Whether consumer demand or government policy constitutes the causal force of this dependency is debatable, however, and it is a question of no small significance.

The energy needs and policies of the United States present issues of spectacular complexity. While the relationship of cause and effect is a puzzle in most areas of thought, today's energy policy debate presents Escher-like puzzles of cause and effect. Unlike Escher's puzzles, however, energy policy is more than a contemplative diversion. The role of the United States on the world stage and the health of the public and the environment depend on successfully solving the puzzle to harmonize economic development, sustainable use of the resources, and public safety. Part of the difficulty of the debate may rise from an assumption that a single solution to the puzzle awaits our discovery. Recent policy statements suggest growing recognition by the government and industry alike that no single solution exists and that the only way forward is a policy of diversification and multiple strategies, encouraging conservation while developing all feasible energy sources.

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